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ABSTRACT

Integration of academic and vocational curricula is just one of an arsenal of processes that school leaders can use to improve delivery of curriculum and instruction. It holds great promise in enhancing acquisition of basic skills necessary in an increasingly technological and socially complex workplace. The variations in which integration can occur are extensive, spanning curriculum, personnel, and organizational facilities. In practice, integration has resulted in significant improvements in student performance and employment results. Students in academic and vocational tracks have learned cooperation and increased their ability to transfer skills. Teachers have benefited through improved communication between instructors, increased job satisfaction, and new knowledge of real-world applications of theory. The skills teachers and counselors need to be successfully involved in integration efforts reflect those needed by today's work force: teaming, cooperative learning, joint planning, and interpersonal skills. Teacher educators have opportunities to instill in future teachers the commitment to integrated teaching. Curriculum developers have a responsibility to provide materials that model integration. School counselor educators need to instill a commitment to implement comprehensive school counseling and guidance programs. Research is needed on the effects of and planning for integrated teaching at the preservice and public school levels. (Contains 36 references.) (YLB)

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Preparing Leaders for a World-Class Workforce: Integrating Academic and Vocational Education

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Introduction

The increasingly technical nature of our society has heightened the need for a skilled workforce effective in using new forms of technology. But success in today's workplace requires more than the ability to adjust rapidly to changing technologies. It also requires the possession of solid academic competencies (Barton & Kirsch, 1990).

As our secondary public school curriculum has evolved in the twentieth century, the task of developing academic competencies in secondary school students has typically rested with those who teach general and college preparatory tracks, and the task of developing technical skills in secondary school students has rested with those who teach vocational education. A growing body of evidence shows that this bifurcated concept of curricular delivery may not be adequately serving students (Selvin, Oakes, Hare, Ramsey, & Schoeff, 1990; Oakes, 1983) or employers (Carnevale, Gainer, & Meltzer, 1988).

The demands of the workplace have changed dramatically in the last two decades, as have America's students. Yet the concepts and delivery of our secondary school curriculum have changed little to accommodate these new realities. As the United States moves toward the twenty-first century, both

academic and vocational education will continue to play a central role in providing workers with skills necessary to succeed in the workplace. Both of these curricular domains must make fundamental changes to address new and dynamic work demands. Given the nature of the most recent amendments to vocational education legislation, it is clear that vocational education is already in the exploratory stages of developing significant structural changes in its delivery systems. One option that is being examined by the vocational education community to achieve this structural change involves the integration of academic and vocational curricula such that the best elements of both are taught simultaneously. This paper briefly examines some of the issues associated with this effort. To examine these issues, questions will be posed and treated individually.

What is integration?

The concept of integration is intuitively and theoretically simple, yet this question is an important one to clarify it conceptually for those interested in promoting it in the schools. First, integrating curriculum and instruction is a process, not an outcome; it is an intervention that schools may undertake to address some larger problem or issue. In recent literature reviews exploring this concept of integration (Gloeckner, Cobb, Love, & Grant, 1992; Feller et

al, 1992) a common issue in America's schools that appeared particularly amenable to a solution using integration was a more efficient and effective acquisition of contemporary basic academic skills by youth in school. This is particularly germane to the topic "Preparing Leaders for a World-Class Workforce", given recent high-profile reports from both the U. S. Department of Labor (Secretary's Commission..., 1991) and the U. S. Department of Education (1991). However, integration attempts could feasibly be undertaken to address a variety of alternative issues or problems within any single school system.

The second issue, driven by the first, is that integration must be viewed as one of a variety of restructuring innovations in which schools might engage to effect positive change. As such, integration efforts fall squarely within the broader school restructuring movement of the 1980's and 1990's and must be grounded in that perspective. This has several consequences. For example, it is likely that the theoretical and empirical knowledge concerning effective techniques for implementing school reform/restructuring would generalize to efforts to integrate academic and vocational curriculum and instruction. Thus, for example, the following conclusions by Adelman (1989) are consistent with what is known about how to introduce innovations generally in school

restructuring efforts. Adelman identified, described, and assessed the potential of several approaches to integrating vocational and academic education and concluded as follows:

1. Curriculum development and professional development are the key activities associated with implementing an integrated vocational/academic curriculum.

2. It is preferable to have both academic and vocational instructors involved in the integration process from the start.

3. Some funding is needed to support professional and curriculum development activities.

4. Often, significant social, intellectual, and even physical barriers between the vocational and academic staff in a high school must be breached to make curriculum integration work. Here, in particular, strong leadership is needed.

5. Restructuring the relationship between academic and vocational education takes a long time — five years is probably a realistic minimum time frame.

The important point here is that the theory associated with innovations in schools, school restructuring, and even organizational development can provide

valuable insights into the processes and expectations of integration attempts by schools.

Another consequence has to do with the concept of opportunity costs. Efforts to integrate academic and vocational education, like other significant school reform activity, take enormous effort and must be viewed relative to other potential innovations which could effect the same outcomes. Unfortunately, as will be seen below, the empiricism around effects of integration activities across academic and vocational education is extremely scant, and what does exist is largely descriptive research. Hence, it is difficult for school leaders who want to undertake innovations in their schools to assess the relative merits of integration versus other efforts with similar potential.

In summary, the answer to the question "What is integration?" would begin by acknowledging that integration is just one of an arsenal of processes that school leaders can use to improve the delivery of curriculum and instruction. In theory, at least, integration activities appear to hold great promise in enhancing the acquisition of basic skills that are thought to be necessary in an increasingly technological and socially complex workplace. As with any significant school restructuring effort, integration activities will

inevitably be organizationally complex, and require sustained time and administrative support to achieve.

How do you integrate?

Integration efforts have been described in the literature in three fundamental ways: (a) integration of programs or curricular content, (b) integration of facilities or physical environments, and (c) integration of personnel. It should be noted that in each of these, integration can occur by one of three means: (a) vocational education can be integrated into academic education (unidirectional), (b) academic education can be integrated into vocational education (unidirectional), or (c) academic education and vocational education can be integrated simultaneously into each others' delivery systems (bidirectional).

The literature documents multiple approaches to integrating curricula (Plihal, Johnson, Bentley, Morgaine, & Liang, 1990; Grubb & Plihal, 1989; Fogerty, 1991; Drake, 1991). One approach, for example, is to fuse curriculum of two or more subjects, combining them into a new subject — for example, business and algebra to form business algebra. Another approach, a multidisciplinary one, is to focus on a single theme across a variety of disciplines. An example would be the design and building of a spacecraft, in

which physics, music, home economics, and technology education curricula all incorporate lessons leading to the completion of the experience. The primary feature of curricular integration is that the curriculum content across two or more disciplines is integrated toward a common goal or theme.

Facility or environmental integration involves changes in building(s) or laboratory setting(s) such that two or more disciplines are taught together. For example, science and technology might both be delivered in an academy school. On a lesser scale, a vocational automotive teacher might use the physics laboratory for a series of lessons focusing on the resistance associated with braking an automobile.

Personnel exchanges may be used in integration. For example, a mathematics teacher may visit an automotive vocational class for two hours a week to teach the relevant mathematics or a business teacher and an english teacher may team teach a business communications course. Many of the newer content areas such as biotechnology, principles of technology, and applied communications often require the expertise of more than one teacher. Integration through personnel exchanges can work without fusing the two teachers' curricula or making physical changes to the classroom.

In summary, then, the variations in which integration can occur are extensive, spanning curriculum, personnel, and organizational facilities. Descriptions of approaches to integration have ranged from simply having a mathematics instructor deliver several related mathematics lessons in a vocational course, to restructuring of entire schools.

How well does integration work?

In theory, integrating curricula has this result: Academic and vocational skills are taught together to increase the ability of the student to learn basic skills and apply these skills in the real world (Strumpf, 1986; Burrows, Ginn, Love, & Williams, 1989). Each curriculum, vocational and academic, can teach students important concepts. Alone, each provides a part of the content students need; together, academic and vocational contents provide a holistic educational experience (Fitzgerald, 1986; Wade & Williams, 1988). Because the difference between theory and application is often difficult for students to grasp, instruction must be redesigned to insure that acquisition and application of basic skills produces increased knowledge (Dronka, 1988; Burrows et al., 1989).

The challenge of bridging the two curricula can be met using an applied approach to teaching basic workplace skills (Carnevale et al., 1988). Curricula

with an integrated approach enhance learning because they accommodate the basic tenets of skills instruction. They allow for both the systematic and sequential development of information (Burrows et al., 1989). With curriculum integration, information seeking can be taught as a thinking process, with less emphasis on the tools used to find the information and raw results of the search (Burrows et al., 1989; McBride, 1990).

Functioning well in the future will require students to develop a clear and positive vision of themselves. That vision can be used to apply present learning to future roles (Patterson, 1985). Mote, Morton, and Marshall (1986) conducted a study using integrated curricula and instruction with rural disadvantaged youth. They found that using a personal and applied approach to instruction resulted in significant improvements in student performance. In the three years of the program, only 3% of students did not graduate from high school or receive a GED diploma. Employment results were equally impressive — 68% retained their initial jobs or moved to better positions. The control group in this study did not experience the same successes. Twenty percent dropped out of school, 10% failed to meet graduation requirements, and only 6% had jobs after graduating. Clearly, in this example, applied approaches to curricula and instruction were advantageous.

Teachers may also benefit from their involvement with integrated instruction. Vocational teachers can learn effective strategies for teaching basic skills and become better at understanding the theory that undergirds many occupational skills. The entire faculty needs to be involved in developing strategies to strengthen the basic competencies of students (Dronka, 1988); when academic and vocational instructors work together to develop curriculum designed to coordinate academic skills with vocational instruction, they develop a new awareness of each others' needs and abilities. As a result, communication between instructors can improve significantly.

In other studies involving similar joint efforts by vocational and academic teachers, the academic teachers learned to help students apply basic skills to careers that interested them. Additional benefits for these teachers included increased job satisfaction, increased ability to teach basics and theory, new knowledge of real world applications of theory, a more positive school climate, and acquisition of new teaching strategies (Owens & McClure, 1989; Grosvenor & Thode, 1986). Students in both academic and vocational tracks learned cooperation, increased their ability to transfer skills, enhanced their ability to see the relevance of otherwise unrelated subject matter, increased their ability to work as team members (Owens & McClure, 1989; Budke, 1988; Burrows et

al., 1989; Jurmo et al., 1989; Carnevale & Johnston, 1989; Polto & Phen, 1988) and improved their performance academically and vocationally (Bottoms, 1989; Mann, 1987; Phillips, 1987; Cardiff, 1986).

In a large-scale descriptive research project, almost 3,100 high school seniors identified as vocational completers from 34 pilot sites were studied by the Southern Regional Educational Board (SREB) (Bottoms & Korcheck, 1989). The SREB schools in the 13 member states implemented approaches designed to increase reading, mathematics, and science achievement. Approaches included requiring students to complete a more rigorous and coherent program of vocational and academic study; increasing the amount of time vocational teachers spent explicitly reinforcing higher-level basic competencies; expanding the use of applied, "real world" instructional approaches in academic courses; designing courses that focused on developing specific academic skills; and providing individualized counseling to assist students in the selection of courses. In general, the results from this research were extremely positive, especially in the traditional academic achievement areas of reading and mathematics. Perhaps more importantly, the data suggest that integration efforts can have important ameliorating effects on traditional achievement differences across gender and ethnic groups.

Two additional studies reported the successful combination of academic and vocational programs in the California Peninsula Academies (Stern, Dayton, Paik, Weisberg, & Evans, 1988; Stern, Dayton, Paik, Weisberg, 1989). These studies evaluated 11 academies created in California public high schools to retain likely dropouts. The state of California is subsidizing these academies, which are designed to replicate two programs begun in 1981 in a school district on the San Francisco peninsula — hence the name Peninsula Academy. Each academy is a school within a school. All of the academies at present are designed to enroll students from grades 10 through 12. Each academy focuses on a particular occupational sector, such as the health industry or computer related occupations. Both studies offer strong evidence that the academy model is successful in reducing the number of dropouts. In general, students in the academy programs had better attendance rates, took more credits in school, attained a higher GPA, and failed fewer courses than the massed comparison group.

What are the training implications of integration?

Schools are being presented with the challenge to integrate instruction across their curricula to enhance the acquisition of basic skills by students and better prepare them for the workplace of the future. Vocational educators have

historically been first to respond to the changing skill needs of the workplace. But all students work, not just vocational students. Thus, the call for planning and integration of basic skills into vocational education is a part of a larger demand. Learning theory suggests that training in these contemporary basic skills must be included in all aspects of the public school curriculum to assure that students get these skills and get them well. Delivering integrated instruction effectively will require nothing less than a significant reshaping of how our schools and curricula are organized and how our administrative, teaching, and guidance personnel think and teach. Vocational educators and school counselors must begin to take a leadership role in this movement to restructure schools.

The skills teachers and counselors need in order to successfully be involved in integration efforts reflect those needed by today's workforce. Teaming, cooperative learning, joint planning, and interpersonal skills are examples of proficiencies needed. Teaching at both the higher education and secondary levels typically isolates teachers and encourages a more narrow conceptual base in the classroom. This is inevitable when a single teacher has sole responsibility for the content taught. Integration requires teachers to break that isolation by collaborating in instructional delivery (Schenka, Jensen, &

Wondrasch, 1989). It will also require school counselors to understand the integrated curriculum and to help plan student's programs to best facilitate the acquisition of basic skills.

The first challenge facing vocational educators and school counselors as they attempt to assume a co-equal role in developing an integrated curriculum is to convince teachers, administrators, and parents that training in the ability to apply knowledge is as important for students as knowledge itself. The second challenge is to convince teachers, administrators, and parents that all students learn better when they are required to use their new knowledge in community, family, and workplace settings. Vocational educators and school counselors represent a bridge to these relevant settings.

Organizing our schools, curricula, and personnel to deliver integrated instruction will require action across a variety of dimensions. A logical place to begin to sustain change over the long term is in our teacher education and school counselor education programs. Teacher educators have significant opportunities to instill in future teachers the commitment to demand integrated teaching assignments. It is not likely that teacher educators will be successful, however, if they continue to deliver their training by segregating vocational and academic teacher education. They must model integrated teaching of both

theoretical and applied knowledge, and demonstrate cooperation with others, negotiation of differences among faculty members, and flexibility in the educational environment. Thus, integration of content and instruction is indispensable. It requires a serious look at curricula, instruction, and organizational structure to identify the content and processes essential to successful teaching in an information society. It also requires teacher educators to help preservice teachers avoid dualistic thinking. The skills of thinking laterally and creatively require practice. Teacher educators must help their students learn these skills.

While the responsibility for the delivery of preservice education lies with teacher educators, curriculum developers also have a responsibility in the success of integration efforts. Materials provided to teacher educators must, themselves, model integration. Curriculum materials should be flexible enough to be used with both preservice and in-service teachers. The materials must be user friendly and individualized, they must focus on competency based outcomes, and they must emphasize multiple processes which lead to multiple solutions.

Attention must also be given to the competencies necessary for all preservice teachers and school guidance counselors as they exit the system.

These individuals should be able to: (a) understand different learning styles and how teaching in either an abstract or applied method will affect learning; (b) understand how to help students expand their possibilities beyond what their experience may have limited them to consider; (c) assess students' strengths and weaknesses in such a manner that students are accelerated in learning rather than remediated; and (d) understand how to function in, and advocate for, innovative schools.

School counselor educators will also need to instill in future school counselors the commitment to (a) implement competency based, comprehensive school counseling and guidance programs and (b) plan quality curriculum options that will prepare students for success in the workplace, school, and home. How does counselor education get from its current position of delivery of services to its desired position of comprehensive school counseling and guidance? Counselor educators continue to make choices concerning the preparation of counselors to meet the immediate needs of students while trying to progressively move them toward a new system (Carlson, 1989). Attitudes and loyalties can be difficult to change, however. Changes do appear possible, drawing from features central to historical types of school counseling models. As Trotter (1991) suggests, we have much to learn from the comprehensive

approach to school guidance and counseling concerning (a) student needs; (b) the career development aspect of vocational guidance; (c) the classroom guidance curriculum; (d) individual student planning; and (e) responsive service functions of the clinical, constellation-of-services approach.

Summary

Research is needed on the effects of, and planning for integrated teaching, both at the preservice and public school levels. This research must span the domains of organizational restructuring, curriculum integration, and team teaching with a variety of personnel. We need to test the effects of different integrated teaching techniques in a host of school structures, large and small, urban and rural, heterogeneous and homogeneous, public and private. Problem based teaching is a promising instructional approach to integrated teaching, yet it has a surprisingly narrow empirical base with equivocal results. It needs to be examined through a variety of methodological approaches and across the spectrum of educational levels and content areas. Finally, we need to know what teachers and administrators think about integrated teaching when they do it. How long does it take to implement integrated teaching, and how does this length of time vary for different models of integration? What is its impact on school climate and organizational complexity? How do you monitor

the planning and delivery of integrated teaching? These questions and others like it will take a sustained and broad-based approach to research. Until they are answered, however, the effects of integration efforts will be unknown,

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